

WHAT IS CLAIMED IS:

5 1. A method of making a disposable article comprising:
incorporating a humidity responsive material having
an amount of locked-in shape deformation into the disposable
article; and

activating the humidity responsive material by
subjecting the disposable article to a humid environment.

10 2. The method of Claim 1, wherein the humidity
responsive material is activated by exposing the humidity
responsive material to a humid environment having a relative
humidity of at least 50%.

15 3. The method of Claim 2, wherein the humid
environment has a relative humidity of at least 75%.

4. The method of Claim 2, wherein the humid
environment has a relative humidity of at least 85%.

20 5. The method of Claim 1, wherein the humidity
responsive material is capable of being deformed in at least one
spatial dimension when exposed to one or more external forces, is
capable of maintaining a degree of deformation in at least one
25 spatial dimension once the external force is removed, and is
capable of exhibiting a change, or percent recovery, in at least one
spatial dimension when subjected to a humid environment.

30 6. The method of Claim 5, wherein the locked-in shape
deformation is created by stretching the humidity responsive
material.

35 7. The method of Claim 6, wherein the stretched
material possesses a draw or stretch ratio of at least 1.5 in one or
more directions.

8. The method of Claim 6, wherein the stretched material possesses a draw or stretch ratio in one or more directions of from about 2 to about 10.

5 9. The method of Claim 1, wherein the humidity responsive material comprises a multi-layer or micro-layer structure having separate layers of an elastomeric polymer and a non-elastomeric polymer.

10 10. The method of Claim 1, wherein the humidity responsive material comprises a blend of an elastomeric polymer and a non-elastomeric polymer.

15 11. The method of Claim 10, wherein the non-elastomeric polymer is a moisture absorbing polymer, and wherein the moisture absorbing polymer exhibits at least a 20% reduction in modulus when the material is exposed to a humid environment.

20 12. The method of Claim 11, wherein the moisture absorbing polymer exhibits at least a 30% reduction in modulus when the material is exposed to a humid environment.

25 13. The method of Claim 11, wherein the moisture absorbing polymer exhibits at least a 50% reduction in modulus when the material is exposed to a humid environment.

30 14. The method of Claim 11, wherein the elastomeric polymer comprises thermoplastic polyurethane, poly(ether-amide) block copolymer, thermoplastic rubber, styrene-butadiene copolymer, silicon rubber, synthetic rubber, styrene isoprene copolymer, styrene ethylene butylene copolymer, butyl rubber, nylon copolymer, spandex fibers comprising segmented polyurethane, ethylene-vinyl acetate copolymer or mixtures thereof.

35

15. The method of Claim 11, wherein the moisture absorbing material comprises polyethylene oxide, polyethylene glycol, polyvinyl alcohol, polyvinyl pyrrolidone, polyvinyl pyridine, or mixtures thereof.

5

16. The method of Claim 1, wherein the humidity responsive material comprises at least one shape deformable matrix material.

10

17. The method of Claim 16, wherein the shape deformable matrix material comprises a polymer.

15

18. The method of Claim 16, wherein the shape deformable matrix material comprises polyester-based thermoplastic polyurethane; polyether-based polyurethane; polyethylene oxide; poly(ether ester) block copolymer; polyamide; poly(amide ester); poly(ether amide) copolymer; polyvinyl alcohol; polyvinyl pyrrolidone; polyvinyl pyridine; polyacrylic acid; polymethacrylic acid; polyaspartic acid; maleic anhydride methylvinyl ether copolymers of varying degrees of hydrolysis; polyvinyl methyl ether copolymers of polyacrylic acid and polyacrylic esters; segmented block copolymer having one or more hard segments and one or more soft segments; or mixtures thereof.

20

25

19. The method of Claim 18, wherein the shape deformable matrix material comprises a segmented block copolymer comprising one or more hard segments and one or more soft segments, and wherein either the soft segment, the hard segment, or both contain functional groups or receptor sites that are responsive to humidity.

30

35

20. The method of Claim 19, wherein the functional groups are selected from the group consisting of urea, amide, nitro, nitrile, ester, ether, hydroxyl, ethylene oxide, amine groups, carboxylic acid salts, sulfonic acid salts, ionic groups, and receptor

sites having an unbalanced charge distribution formed from one or more of the above groups.

5 21. The method of Claim 18, wherein the shape deformable matrix material comprises a segmented block copolymer comprising an elastomer.

10 22. The method of Claim 21, wherein the elastomer is selected from the group consisting of polyurethane elastomers, polyether elastomers, poly(ether amide) elastomers, polyether polyester elastomers, polyamide-based elastomers, thermoplastic polyurethanes, poly(ether-amide) block copolymers, thermoplastic rubbers, styrene-butadiene copolymers, silicon rubbers, synthetic rubbers, butyl rubber, ethylene-vinyl acetate copolymer, styrene isoprene copolymers, styrene ethylene butylene copolymers and mixtures thereof.

15 23. The method of Claim 22, wherein the elastomer is selected from the group consisting of polyurethane elastomers and poly(ether amide) elastomers.

20 24. The method of Claim 16, wherein the humidity responsive material comprises a non-activatable additional material.

25 25. The method of Claim 24, wherein the non-activatable material is selected from the group consisting of non-elastomeric polymers, tackifiers, anti-blocking agents, fillers, antioxidants, UV stabilizers, polyolefin-based polymers and mixtures thereof.

30 26. The method of Claim 24, wherein the humidity responsive material comprises from about 40 to about 99.5 weight percent of shape deformable polymer and from about 60 to about 0.5 weight percent of additional non-activatable material.

35

27. The method of Claim 24, wherein the humidity responsive material comprises from about 60 to about 99.5 weight percent of shape deformable polymer and from about 40 to about 0.5 weight percent of additional material.

5

28. The method of Claim 24, wherein the humidity responsive material comprises from about 80 to about 99.5 weight percent of shape deformable polymer and from about 20 to about 0.5 weight percent of additional non-activatable material.

10

29. The method of Claim 1, wherein the disposable article is selected from the group consisting of diapers, training pants, adult incontinence products, feminine care products, sanitary napkins, tampons, health care products, wound dressings, surgical drapes, and surgical gowns.

15

30. The method of Claim 1, wherein the humidity responsive material exhibits a temperature change of less than about 15°C when subjected to a humid environment.

20

31. The method of Claim 1, wherein the humidity responsive material exhibits a temperature change of less than about 12°C when subjected to a humid environment.

25

"ATLIB02 33170 3"